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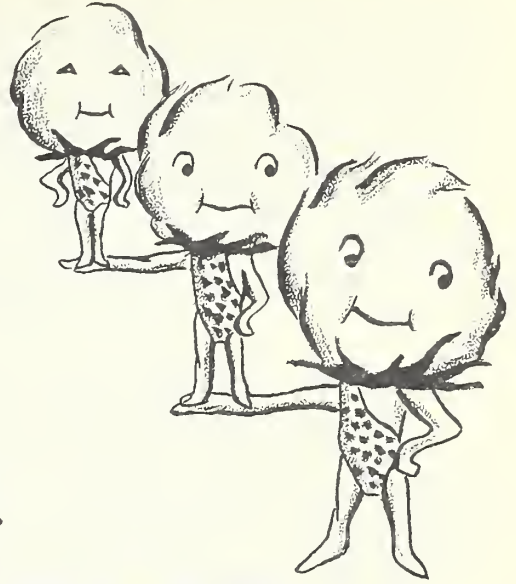


BOOK NUMBER A72
Ex8

Make COTTON PRACTICES

support
each other

in your cotton
farm demonstrations



NOT SINCE the invention of the cotton gin has there been such progress in cotton production as during the last 25 years. Yields have been increased 57 percent, staple has been lengthened, grade and fiber strength have been improved, and man-hours per acre cut.

THIS PROGRESS has been the result of applying many scientific practices - mechanization; improved varieties; insect, disease, and weed control; better fertilization, harvesting, and management.

BUT all these advances, together with changing market demands, have made cotton farming a more complicated scientific job. We still have surpluses. Cotton farmers still face adjustments that cannot wait, and competition at home and abroad.

WE STILL LOSE 1 bale in 7 to insects. Farmers are still feeding a lot of fertilizer to weeds, diseases, insects, and poor management. The average grower in most communities gets yields less than half of what the better growers get. And who knows what the efficient top yields could be?

LINKING TOGETHER in complete cotton farm demonstrations the practices that have brought us so far is a major way to attack all these problems. How better can we help cotton farmers move forward to meet competition and put science to work to increase efficiency and profits?

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Organizing and Planning the Cotton Farm Demonstration

Cotton is so important to southern agriculture that the efficiency of cotton production and marketing needs to be increased through the use of research and education. Therefore the extension and experiment station directors have appointed a joint committee to develop a plan for complete cotton demonstrations that would include all practices which research and successful farming experience have proved to be of value. It is an established fact that good practices, where used in combination, have a supporting effect on each other that results in a greater total benefit than the sum of the advantages of these practices used separately. The deans and directors of both research and extension in colleges of agriculture in cotton States urge this solution. It is also urged by the leadership of the National Cotton Council, the Cotton Research Congress, and others concerned with cotton.

The report of the Joint Committee between research and extension recognizes education (employing the demonstration and other techniques) as a major function of the Extension Service and research as a major function of the Experiment Station. At the same time the report strongly urges the extension directors and the experiment station directors in each major cotton-producing State in the southern region to cooperate in the appointment of a continuing team of research scientists and extension specialists. This group might also include cotton agronomists, plant breeders, soil chemists, entomologists, plant pathologists, agricultural engineers, economists, and marketing specialists. The Joint Committee further recommends that the team be charged with the development of a comprehensive interdependent program of research and education to work on the problems of the cotton farmer. The primary function of this joint team of educational and research workers would be:

1. To envision and design a rounded program of education and research for improved production, harvesting, and marketing of cotton in the State.
2. To provide a mechanism for the interchange of information, ideas, and suggestions. Each State team or committee would naturally design the sort of program best adapted to its own State.

Selecting Demonstration Farms

1. The County Agent should select a complete cotton demonstration farm according to criterial supplied by extension and research specialists.
2. The operator of the farm selected should have a thorough understanding of the objectives of the demonstration. He should be capable and willing to carry out, under the supervision of the county agent, all practices recommended by the Joint Committee.
3. Where practicable, all recommended practices should be included on the demonstration farm and adequate records kept for evaluation.
4. The cooperation of local dealers is desirable in maintaining the interest of the farm family as well as the dealer.
5. The county agent should make frequent visits to the demonstration farm to keep up the interest of the family and to see that recommendations are carried out.

6. The results of the demonstration should be carried to the public through:

- a. Field days on the farm.
- b. Radio and television interviews with the family.
- c. Appearance of the farmer on programs at public meetings in county.
- d. News articles.
- e. Other ways that may fit local situations.

Practices To Be Considered in Planning the Demonstration

In order that the complete cotton farm demonstrations may be as uniform across the Cotton Belt as conditions permit, several directors have requested that the Federal Extension Service prepare an outline of procedure and practices. Some of the more important practices will need to be localized and supplemented by the State specialists.

Soil Management

The land is the foundation of a farm family's living. How well the soil yields will depend on how well it is treated. Farmers cannot afford to grow cotton on the wrong land or in the wrong way. The following practices should be given careful consideration:

1. Terrace land that is subject to erosion.
2. Establish a crop rotation system. Most cotton farms are concerned with other crops. In proper rotation the yield of all row crops can be increased. Sod crops and legumes have consistently reflected great benefits when included in a regular rotation. These benefits have been manifested through increased productivity of the soil, improved tilth, control of erosion, expansion in moisture-holding capacity, and a measure of control of insects and diseases.
3. Make soil tests to determine plant food requirements. Apply the kind and amount of fertilizer called for by the soil analysis, in accord with State recommendations.
4. Prepare the seedbed to conform with the kind of cultivation and harvesting that is to follow.
5. Plant as soon as the soil is warm enough for rapid seedling emergence; plant sufficient seed per acre to get a good stand; be certain that planning equipment is correctly adjusted for proper placement of seed and fertilizer.

Cotton in Farm and Home Development

Most cotton farmers are concerned with other enterprises. This is clearly implied by the fact that four-fifths of the farms growing cotton produce eight or fewer bales per year. This is significant. Thus, it is important that cotton be keyed into a system that gives proper emphasis to each enterprise on the farm. This is the farmer's best way to even out his labor load, to go about conserving the productivity of his soil, and to assure his family a continuing income. There is no set formula for balancing cotton with other farm enterprises; each farm requires its own solution. However, the need

can easily be illustrated. Cotton may readily require 4 to 10 times the labor for chopping and picking as at other seasons. The only ready means of assuring this labor is to fit cotton with enterprises having high labor requirements at other seasons. The benefits of a balanced system rest largely on the assurance of continuing income and the advantages of having several income sources instead of one.

Varieties and Planting Seed

Pure seed of improved varieties is the only means by which farmers can take full advantage of genetic research accomplished by Federal, State, and private cotton breeders. The purpose of current cotton breeding and improvement investigations is to develop varieties of cotton that will produce maximum yields of the most desirable qualities under numerous prevailing and changing conditions as affected by soils, climate, insects, diseases, and cultural and harvesting practices. The current work is particularly concerned with the development of varieties that will meet increased competition from synthetic fibers and foreign cottons and be better suited to mechanical harvesting.

In choosing your planting seed, carefully consider the following points:

1. Grow the variety recommended for your community or area.
2. Where wilt is prevalent, plant a wilt-resistant variety.
3. Grow only a well-bred, high-yielding, early-maturing variety with desirable staple length (1 inch or longer) and other superior quality characteristics.
4. Be sure your seed has a high percentage of germination.
5. Treat all seed to control diseases during germination and early seedling growth.
6. To assure a continuing supply of better planting seed, cooperate in a program for increasing, processing, and distributing planting seed of approved varieties. The effects of improved varieties and purity of cottonseed on yields per acre have been an important factor in raising the average yield of cotton in the United States during the past two decades. The use of seed of superior varieties, in combination with other practices being recommended by the cotton-producing States for complete cotton farm demonstrations, might well be expected to further increase yields per acre and lower cost of production per pound.

Weed Control

Among the cost items in cotton production, weed control ranks second only to harvesting. Weeds compete with crops for water, light, and mineral nutrients. For instance, one plant of common yellow mustard required twice as much nitrogen, twice as much phosphoric acid, four times as much potash, and four times as much water as a well-developed oat plant. A common ragweed has a water requirement three times that of corn. Weeds increase the cost of labor and equipment and impair the quality of farm products. Expensive seed-cleaning equipment in commercial seed houses is an additional cost made necessary by weeds.

In developing the complete cotton farm demonstration, consider the following points on weed control:

1. Use a combination of mechanical, chemical, and flame methods for complete control.

2. Use rotary hoe in combination with sweeps as an aid in bringing up cotton after packing rains and for control of young grass and weed seedlings. Operate rotary hoes more than 5 miles an hour for best results (or follow State recommendations). Discontinue rotary hoeing when plants are 8 inches high.

3. After plants are 8 inches high, use sweeps in combination with flame cultivation for weed and grass control (the flat-type burners are recommended).

4. Use cross-cultivation (on fertile soils where fields are large and topography is suitable) for thinning and weed and grass control.

5. Under ideal weather conditions, hand hoeing may be completely eliminated. Otherwise, hand hoeing would be reduced to a minimum. Alert growers will watch developments, adopting scientifically proved procedures as rapidly as they can fit them to their system. Meanwhile the grower will make sure he is using the most improved tools and devices available for this work.

Disease Control

With cotton diseases causing a loss of more than 400 million dollars annually, it is important to include some of the following practices in the complete cotton farm demonstration. (Consult State plant pathologist for details.)

1. Rotate crops to help keep down root knot and other nematodes, the wilts and other soil-borne diseases.

2. Fumigate soil to increase yields through suppression of nematodes and soil-borne diseases (and insects).

3. Plant resistant varieties to combat Fusarium wilt, root knot, and bacterial blight. Varieties tolerant to Verticillium wilt are being developed.

4. Practice delinting and seed treatment to get uniform stands of strong plants. For control of seedling diseases and bacterial blight, use mechanically delinted or acid-delinted seed followed by a thorough treatment with Ceresan-M, Dow 9-B, Sperguson, Arasan, or other fungicide recommended by the State agricultural college or experiment station.

5. Defoliate cotton to reduce boll rots.

6. Destroy stalks early to help combat Ascochyta blight, bacterial blight, and boll rots (also important in control of certain cotton insects).

Other practices such as thick stands and high beds help reduce severity of Verticillium wilt in the irrigated Southwest. Early fall plowing and Hubam clover rotation will reduce cotton root rot in Texas and the Southwest.

Insect Control

Much progress has been made toward the control of insects during the past decade, but we are still losing annually to insect pests about 2 million bales of cotton, worth about 350 million dollars. Many insects, previously of little consequence, have recently become pests of major importance. There are many new and effective insecticides to combat these pests.

Certain steps concerning insect control are of basic importance. Since cotton insect control varies somewhat in each State, these recommendations can only be of a general nature. Some of these might be listed as follows:

1. Use recommended cultural practices, especially the early fall destruction of cotton stocks for reducing next season's population of insects, such as boll weevil and pink bollworm.
2. Be prepared to fight insects by having at least a part of your insecticides on hand and equipment for distributing insecticides in good working order.
3. Check your field at regular intervals to determine insect infestation, and apply control measures when needed.
4. Follow the application schedules and rates as recommended in the official State guide.
5. Apply dust only during calm periods.
6. Make certain that all nozzles are properly adjusted and operating when applying sprays.

Irrigation

Supplemental irrigation is much discussed and increasingly applied throughout the South, Southeast, and Southwest. Conditions, methods, and results vary widely. In the arid West sometimes 18 to 24 inches of water is applied. In the more humid mid-South and Southeast, some of the needed moisture is supplied by rainfall, and that applied by irrigation most often does not exceed 10 to 12 inches.

In considering supplemental irrigation as a means of reducing or eliminating hazards of drought, bear in mind the following points:

1. A reliable water supply must be available.
2. A high degree of managerial ability is needed on irrigated farms.
3. Irrigate only cotton planted on fertile soils and fertilized heavily.
4. Gear irrigation to size of operation. Consider irrigation of additional crops to justify investment.
5. Follow State recommendations as to when to irrigate, methods to use, and amount of water to apply.

Defoliation

Cotton defoliation becomes increasingly important as mechanical harvesting increases. Success or failure with chemical defoliation will depend most often on the condition of the plant at the time of application. The weather is important, however, because it conditions the growth and reproductive balance of the plant, as well as its reaction to defoliant chemicals. In a number of States the Weather Bureau in cooperation with local broadcasting stations has rendered a valuable service in daily and long-range weather predictions. Defoliation has proved to be a valuable practice. Use it when recommended:

1. As an aid to harvesting. It is most important where harvesting is to be done by mechanical means.
2. To reduce boll rot.
3. To make hand picking cleaner and faster.
4. To reduce insect damage.

Each cotton-producing State recommends the kind and quantity of chemicals to use. Follow these recommendations as a guide to defoliation.

Harvesting

A conservative estimate is that farmers lose 100 million dollars each year through failure to harvest for the best quality cotton possible. In harvesting for quality, observe the following practices:

1. Harvest promptly after cotton opens.
2. Harvest only wide-open bolls, free of insect damage.
3. Harvest dry, or dry after harvesting.
4. Keep grass and excessive trash out of seed cotton.
5. Keep tar, grease, matches, rocks, and other contaminants out of seed cotton.
6. Keep seed cotton of like qualities together.
7. For machine harvesting prepare fields carefully and keep free of weeds and grass.
8. Use only trained machine operators for machine harvesting.
9. Follow equipment manufacturer's instructions carefully.
10. Avoid packing or tramping in wagons, trucks, or trailers.
11. Take to a cotton gin with proper equipment.

Ginning

To maintain quality and fiber properties, select a gin that gives attention to the following recommended practices:

1. Maintain uniform loose rolls.
2. Keep overflow to a minimum, avoid machining.
3. Use only necessary cleaning equipment for best grades.
4. Use only enough drying to insure smooth ginning.
5. Train all employees to keep equipment in proper adjustment and operating condition.
6. Avoid plating or mixing different qualities in the bale.
7. Do not use stencil inks on bales.
9. Keep out all contaminants such as oil, grease and tar.
10. Strive at all times to gin for the highest value.

Marketing

Cotton producers are losing millions of dollars each year from lack of uniformity and poor lint quality. A product of uniformly high quality is the most important essential in establishing and maintaining a good market.

Group action on a community or area-wide basis is necessary to furnish a sufficient volume of uniformly high-quality cotton that may be marketed to the best advantage. However, in order to attain both uniformity and quality, each individual should give attention to the variety he selects and to all the cultural practices recommended, including insect and disease control, harvesting, and ginning. After achieving a high-quality product, he should sell his cotton as far as possible on grade, staple, and variety value. To a surprising extent the value of an individual grower's cotton is determined by the average quality of the cotton produced in his community.

Evaluation

A record of what was done, how it was done, what it cost, and what it returned is necessary to evaluate the worth of a practice or a group of practices.

Notes on soil and climatic conditions at the time of applying the practices will be helpful in evaluating results. Well-conducted demonstrations, where proper evaluation can be made, will supply excellent educational material for use throughout the State. The Joint Committee may wish to develop a suggestive outline for records on the complete cotton farm demonstration.

